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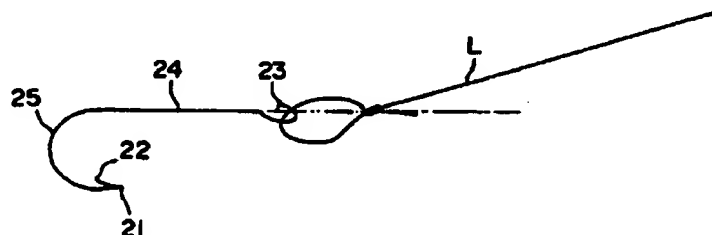
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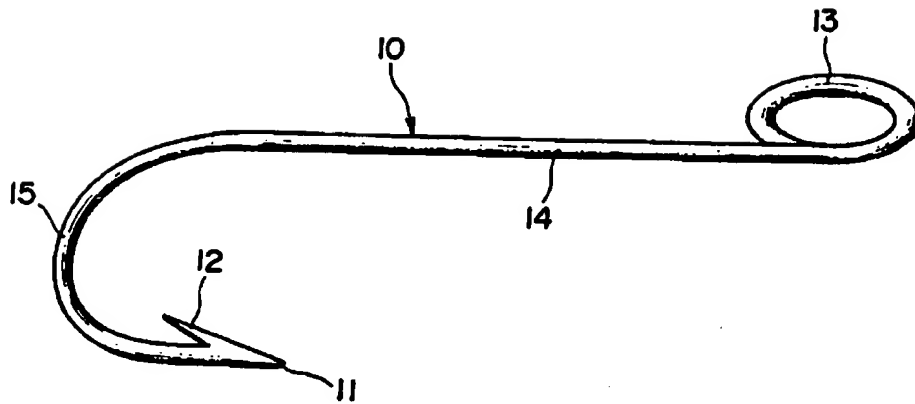
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**(12) UK Patent Application (19) GB (11) 2 304 513 (13) A****(43) Date of A Publication 26.03.1997****(21) Application No 9518174.9****(22) Date of Filing 06.09.1995****(71) Applicant(s)****Tienco Ltd****(Incorporated in Japan)****1-11 Kikukawa 3-chome, Cumida-ku, Tokyo 130,  
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BIRMINGHAM, B1 1TT, United Kingdom****(51) INT CL<sup>6</sup>****A01K 83/00****(52) UK CL (Edition O)****A1A A10****(58) Documents Cited****GB 2214043 A****GB 2067882 A****GB 1242666 A****US 4621449 A****US 4503634 A****(58) Field of Search****UK CL (Edition N) A1A A10****INT CL<sup>6</sup> A01K 83/00****(54) Fish hooks****(57) In a fish hook that completely eliminates the need for an eye on the end of the hook that must be threaded to tie the hook to the line, a slip catch is provided to hold the line on the hook instead of the eye.****FIG. 5****GB 2 304 513 A**

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FIG. 1



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FIG. 2

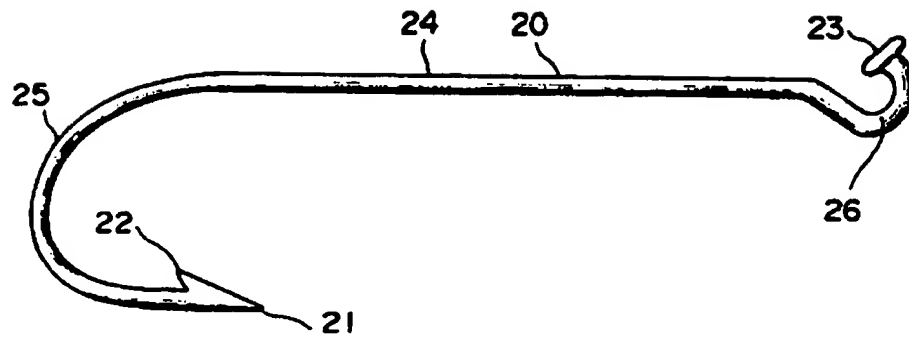


FIG. 2A



FIG. 2B



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FIG. 3

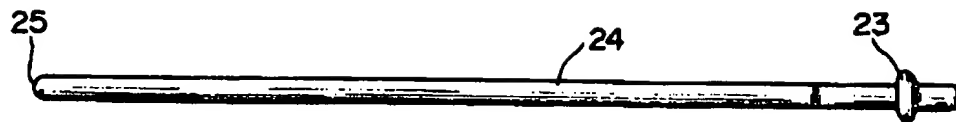
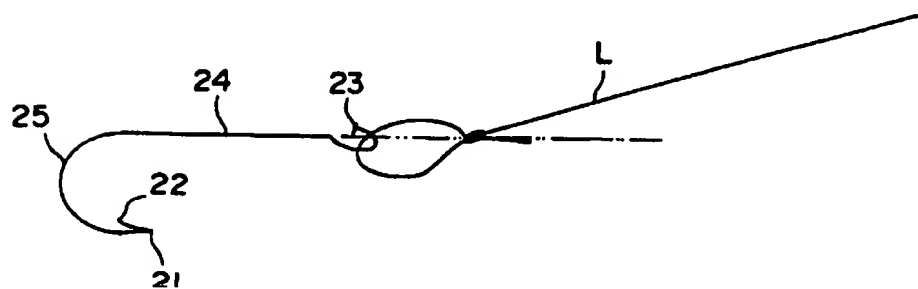


FIG. 4



FIG. 5



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FIG. 6

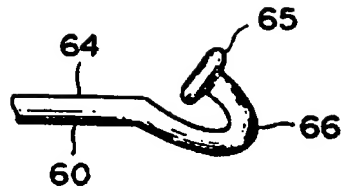


FIG. 7

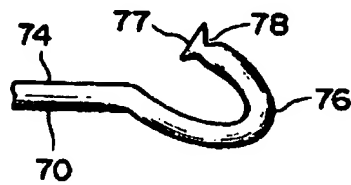


FIG. 8

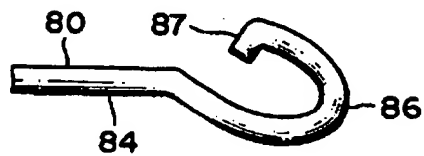


FIG. 9

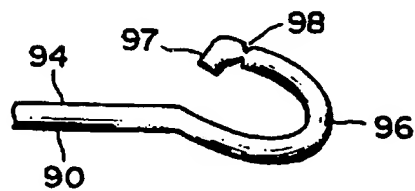
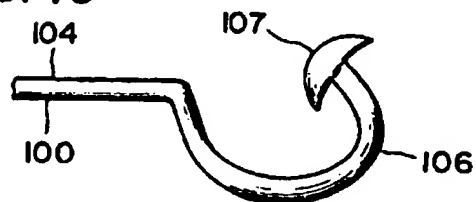
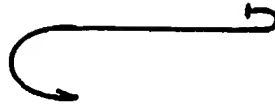


FIG. 10

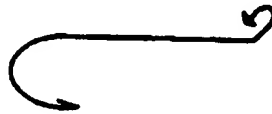


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**FIG. 11**



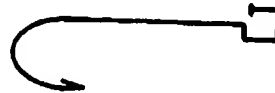
**FIG. 12**



**FIG. 13**



**FIG. 14**



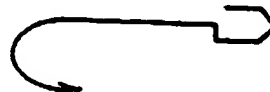
**FIG. 15**



**FIG. 16**

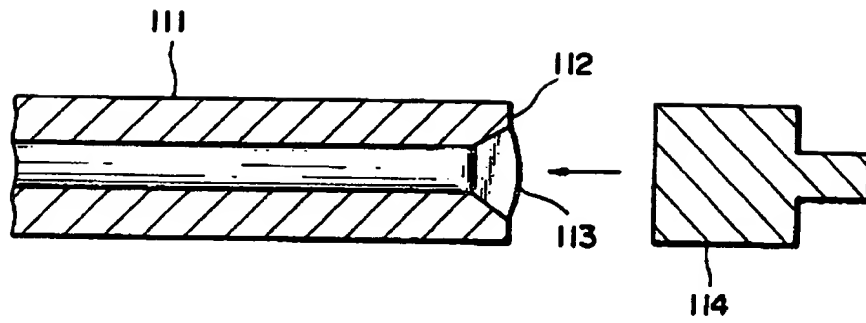


**FIG. 17**



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FIG. 18





## **IMPROVED FISH HOOK**

The present invention is directed to improved fish hooks intended to increase the ease of use of hooks in low light conditions, particularly hooks that are very small. The hooks of the present invention are particularly adapted for use in tying flies for fly fishing.

### **Background of the Invention**

Recently, interest in fly fishing has soared and the sport of fly fishing has gained adherents of many ages. Fly fishing is frequently the preferred choice in connection with sport fishing for such game fish as Atlantic Salmon, and Trout including the various species, Brown Trout, Rainbow Trout, Brook Trout, Lake Trout and others. Fly fishing is also used for such sport fishing of Graylings and Char.

As the sport of fly fishing has developed, the flies used can basically be divided into two branches, wet flies, i.e. with flies presented below the waters surface and dry flies with presentation in or on the surface of the water. Many of the artificial flies that are currently used in connection with fly fishing are designed to emulate natural insects such as the caddies, sedges, and chironomids or midges. Particularly preferred are artificial flies of insects that are seen on the water in daytime, particularly on slow flowing, clear rivers and lakes. Other favored natural flies that are models for artificial flies include stone flies, dragonflies and damselflies and such terrestrials as beetles, grasshoppers, caterpillars and diptera.

One of the problems with natural bait is that very little of fish's natural food is capable of being threaded on the hook and then cast by the fishermen without damage or loss of the bait. While worms, prawns and shrimp are generally strong enough to have a hook threaded through them without breaking apart, only the largest insects are being enough to be pierced by a hook. Many of these insects are also frequently too fragile to be cast. The alternative for fishermen has been the process of making imitations of these insects, i.e. artificial flies that would mimic the features of suitable natural bait. The artificial flies used by fishermen are as varied as their individual personalities. In fact, whole books are dedicated to the varieties of different flies available. Despite the myriad of flies used by fishermen, one constant remains, the fly must be tied to a hook or some other means to hold the fish when the fish hits the bait.

One of the requirements in fly fishing is tying the hook to the line. Since many of the hooks are by nature very small, it is frequently very difficult to thread the line through the eye of the hook. This is particularly difficult in the low light levels of early morning and the evening when the fish are commonly believed to be biting. Many novice fishermen also have difficulty in threading the eye and tying a suitable knot through the eye. In addition, as fishermen age, their ability to quickly and easily thread the line through the tiny eye of the hook frequently diminishes. Over the years there has been a myriad of fishermen's aids to assist fishermen in threading the eye of the hook. However, these assists have not generally proved satisfactory, particularly under the difficult conditions present in or along the stream. Accordingly, there is a need for an improved hook, particularly a hook that will permit the fishermen to tie the hook to the line in low light levels and under adverse weather conditions. There is also a need for an improved hook used in fly fishing

that can be easily tied to the line by beginner fishermen as well as the more senior fly fishermen, and particularly those who do not have good visual acuity for the close work needed to thread the eye of the hook with the line.

#### Summary of the Invention

The present invention provides an improved fish hook that completely eliminates the need for an eye on the end of the hook that must be threaded to tie the hook to the line. The improved hook may be readily tied to the line without the need of any visual aids or other devices that assist fishermen in threading the eye. It has been found through extensive use that the hook arrangement of the present invention when tied to the line is sufficiently strong compared to traditional hooks so that there is little risk of losing the hook, the attendant fly or the fish. The present invention is accomplished by a hook arrangement that can be readily tied even under the most adverse lighting and weather conditions encountered by fishermen. The advantages of the present invention are achieved by the use of a unique slip catch that permits the line to be tied to the shank of the hook and does not slip off during use even when the fish are of a substantial size and strength.

#### Brief Description of the Drawings

Figure 1 is a prior art fish hook having an eye that must be threaded to tie the line to the hook;

Figure 2 is a fish hook in accordance with one example of the present invention;

Figure 3 is a top view of the hook of Figure 1;

Figure 4 is a bottom view of the hook of Figure 1;

Figure 5 shows a fish hook of the present invention being threaded by a line;

Figure 6 shows a partial view alternate embodiment of the fish hook of Figure 2 having a peened end stop;

Figure 7 shows a partial alternate embodiment of the fish hook of Figure 2 having an indentation in the end stop;

Figure 8 is a partial view of an alternate embodiment of the fish hook of Figure 2 having a bent or hooked end stop;

Figure 9 is a partial view of an alternate embodiment of the fish hook of Figure 8 having a indentation in the bent or hooked end stop.

Figure 10 is a partial view of an alternate embodiment of the fish hook of Figure 2 having a hemispherical end stop;

Figure 11 is an alternate embodiment of the hook of the present invention with a "U" shaped slip catch;

Figure 12 is an alternate embodiment of the slip catch of Figure 11;

Figure 13 is an alternate embodiment of the slip catch of Figure 11;

Figure 14 is an alternate embodiment of the hook of Figure 11 having a squared slip catch;

Figure 15 is an alternate embodiment of the hook of Figure 14 where the slip catch is rectangular;

Figure 16 is an alternate embodiment of the slip catch of Figure 13;

Figure 17 is an alternate embodiment of the hook of Figure 13;

Figure 18 is a drawing of one means for forming the end stop of the hook.

#### Detailed Description of the Invention

The present invention provides an improved fish hook that eliminates the need to thread the eye of the hook in order to attach a line. The present invention may be used under adverse lighting conditions and in all types of weather. In the present invention, a slip catch is provided to hold the line on the hook instead of a tiny eye. Many of the hooks used by fishermen are very small and their eye of the hooks are even smaller thus, making it very difficult to thread the eye with the line under adverse weather conditions and low light levels. In addition, present hooks are difficult even for people with perfect vision to easily thread the line through the eye. The hook of the present invention eliminates these problems and provides a hook that may be tied very easily without unnecessary delay.

Figure 1 shows a traditional fish hook 10 with a point 11 and a barb 12. At the end of the hook opposite the barb, there is an eye 13 provided for attaching the line to the hook. Connecting the eye and the barb are shank 14 and bend 15.

The present invention is suitable for use not only with hooks having a barb on the tip but also with any means used in fishing that must be tied by a line. As a result, the term hook as used herein includes not only fish hooks but any other means. Figure 2 shows a fish hook 20 in accordance with one example of the present invention. This fish hook is provided with a point 21 and barb 22. At the end of the hook 20 opposite the barb in place of the eye 13 of the prior art there is provided an end stop 23. The end stop 23 eliminates the tiny eye and provided a means for tying the line to the hook. Adjacent to the end stop and between the end stop 23 and the shank of the hook 24 is a curved portion 26 which is a slip catch. When the line is tied to the hook, the slip catch and the end stop prevent the line from being pulled off the hook by the force of the cast or a hit by the fish. In use, a slip type knot is tied leaving a loop which is then slipped over the catch 26 and pulled tight. This is shown in more detail in Figure 5.

Figure 3 shows a top view of the hook of the present invention with the bend 25 at one end and the stop 23 being connected by shank 24.

Figure 4 shows a bottom view of the hook of Figure 1 with point 21, barb 22, bend 25 and shank 24. Adjacent to the shank 24 are the slip catch 26 and end stop 23.

Figure 6 of the present invention shows the shank portion of 64 of hook 60. Connected to the shank is slip catch 66 and a peened end stop 65.

By peening is meant causing the end of the hook to expand in one or more directions either by force of some other means to create a head at the end of the hook that will prevent a knot made in the line from being pulled off the hook. Alternatively, a piece of metal wider in diameter or cross-section than the hook can be soldered or brazed onto the end of the hook. As seen in Figure 2A the end stop of Figure 2 can be either circular in cross-section or have some other configuration as desired. Figure 2B shows an end stop of Figure 2 where there is a cross bar of metal on the end to create a stop.

Figure 7 of the present invention shows the shank portion 74 of hook 70. Connected to the shank is slip catch 76 and an end stop 77 having a indentation 78 adjacent to the area where the end stop connects to the slip catch 76. The indentation 78 further assists the catch 76 and end stop 77 in preventing the line from falling off the hook.

Figure 8 of the present invention shows the shank portion 84 of the hook 80. Connected to the shank is slip catch 86 and end stop 87. The end stop 87 is in the form of a bend generally at a right angle. This angle can be less than 90° and will still ensure that there is little chance of the line being pulled off the hook unless the knot is improperly tied. When the angle between the end stop and the shank is less than 90° the bend acts more like a "hook" to retain the knotted line on the hook.

Figure 9 is an alternate embodiment of the hook of Figure 8 showing the shank portion 94 of the hook 90. Connected to the shank is slip catch 96 and end stop 97. Between the end stop and slip catch is an indentation 98.

Figure 10 is an alternative embodiment of the present invention showing shank portion 104 of the hook 100. Connected to the shank is slip catch 106 and end stop 107. The end stop 107 is in the form of a hemispherical cap which has a diameter larger than the diameter of wire of the hook. The hemispherical end stop prevents the line from being pulled off the hook. The end cap may be for example soldered, brazed onto, or peened on, the free end of the slip catch of the hook.

Figures 11-17 show alternate forms of the slip catch of the present invention. For example, the hooks of Figures 11 and 12 have generally "U" shaped slip catches. Figure 12 differs from Figure 11 in that the slip catch is offset from the remainder of the shank. The slip catch is offset from the shank in the direction opposite the slip catch of Figure 12. The slip catches of Figures 13 and 16 are curved while the slip catches of Figures 14 and 15 are squared off, i.e. have generally right angles. Figure 16 shows a hook similar to Figure 12 except for the location of the slip catch vis a vis the shank.

Figure 17 shows a slip catch shape similar to that of Figure 15 but with the addition of a V-shape in its end region. Moreover as illustrated in Figures 16 and 17 it is possible, for some applications, to dispense with the end stop, the bend of the slip catch being sufficient to retain the line alone. Generally however it will be preferable, even in the Figure 16 and 17 configuration, to incorporate an end stop in addition to the slip catch.

The slip catches are formed by bending the end region of the hook's shank to define a curved or angular hooked portion which, in relation to the length of the line and the hook's shank in use, is turned through at



least about 90° so as to produce in conjunction with the end stop (if provided) a reentrant region for catching a slip knot or other loop tied in the line.

Figure 18 shows one means of forming the end stop of the fish hook of the invention. During the manufacture of the hook when the metal is in an annealed state and the metal of the hook is malleable the hook is placed in a die 111 having an open end 112 as shown in Figure 18. The end of the hook 113 is tapped with a hammer 114 to form the end stop, i.e. a section larger in cross-section than the diameter of the wire of the hook. While in a malleable state the end could also be bent to form the end stop of Figures 8 and 9. The crimped end stop of Figure 7 could also be formed in a die. The wire can be pinched mechanically to form the end stop of Figure 7.

Although the above embodiments are representative of the present invention it will be appreciated by those skilled in the art that additional end stops and/or slip catch shapes are within the scope of the present invention. In addition, although the fish hooks have been shown with shanks, bends and barbs it will also be appreciated that other configurations are possible and the slip catch and end stop of the present invention can replace the standard eye in any of the various configurations used by fishermen.

**CLAIMS**

1. An eyeless fish hook comprising a shank having a first end and a second end, said first end having thereon a means for retaining said fish while said fish is being reeled in, said shank having at said second end a means for preventing a line tied around said shank from slipping off the hook when a force is applied to said retaining means.
2. A fish hook as claimed in Claim 1 wherein said means for preventing slipping of a tied line includes a slip catch.
3. A fish hook as claimed in Claim 2 wherein said slip catch is integral with said shank.
4. A fish hook as claimed in Claim 2 wherein said slip catch is a curved or angular hooked region of said shank.
5. A fish hook as claimed in any one of Claims 1 to 4 wherein said retaining means is a barb with a point.
6. A fish hook as claimed in Claim 2 wherein said shank has a bend between said shank and said barb.
7. A fish hook as claimed in any one of Claims 1 to 6 wherein said means for preventing a said line from slipping off includes an end stop.
8. A fish hook as claimed in Claim 7 wherein said slip catch is between said shank and said end stop.

9. A fish hook as claimed in Claim 7 or Claim 8 wherein said end stop is peened.
10. A fish hook as claimed in any one of Claims 7 to 9 wherein said end stop has a cross section greater than the wire diameter of said hook.
11. A fish hook as claimed in any one of Claims 7 to 10 further comprising an indentation between said shank and said end stop.
12. A fish hook as claimed in Claim 7 or Claim 8 wherein said end stop is defined by a bend in the material of said hook.
13. A fish hook as claimed in Claim 12 wherein said bend forms an angle of 90° or less with respect to the material of the shank.
14. A fish hook as claimed in Claim 13 wherein there is an indentation between said slip catch and said end stop.

**Patents Act 1977**12**Examiner's report to the Comptroller under Section 17  
(The Search report)**Application number  
GB 9518174.9**Relevant Technical Fields**Search Examiner  
R F PHAROAH

(i) UK Cl (Ed.N) A1A (A10)

(ii) Int Cl (Ed.6) A01K 83/00

Date of completion of Search  
7 NOVEMBER 1995**Databases (see below)**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-

1-14

(ii)

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- Y: Document indicating lack of inventive step if combined with one or more other documents of the same category. E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A: Document indicating technological background and/or state of the art. &: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2067882 A (BREAKAWAY) Figures 1-4	1, 2, 3, 5, 6
X	GB 2214043 A (NEEDLE) Figure 9	1, 2, 3, 4, 5, 6
X	GB 1242666 A (DAY) Figure 1	1, 2, 3, 5, 6, 7, 10
X	US 4621449 A (NAKAGAWA) Figures 3, 5	1, 2, 3, 4, 5, 6, 7, 8, 10
X	US 4503634 (HAMAYASU) Figure 2	1, 2, 3, 5, 6, 7, 10
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